

WHAT IS CLAIMED IS:

1 1. A power supply with back-up generation comprising:
 2 a power source connected to a first bi-directional converter;
 3 a turbogenerator generator connected to a second bi-
 4 directional converter;
 5 a load connected to a converter;
 6 a DC bus interconnecting each of the converters;
 7 an energy storage element connected to the DC bus;
 8 a bus sensor element connected to the DC bus, providing bus
 9 status signals; and
 10 a controller receiving bus status signals for controlling
 11 turbogenerator.

1 2. The power supply of claim 1 wherein the bus status signals
 2 further comprise:
 3 DC bus voltage; and
 4 energy storage element current flow.

1 3. The power supply of claim 1 wherein the controller further
 2 comprises:
 3 a decoupled speed control loop;
 4 a decoupled temperature control loop; and
 5 a decoupled power control loop.

1 4. A method of providing uninterruptable power to a load
 2 comprising:
 3 providing a primary power source isolated by a first bi-
 4 directional power converter;
 5 providing a turbogenerator isolated by a second bi-
 6 directional power converter;
 7 providing a load isolated by a power converter;

- 8 interconnecting each of the isolation power converters with a DC
- 9 bus;
- 10 connecting an energy storage element to the DC bus;
- 11 monitoring the status of the DC bus and providing the status
- 12 signals to the controller; and
- 13 controlling the turbogenerator using bus status signals.

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